

## ABSTRACT

The present invention relates to materials comprising hydrophilic polymers and immobilized proteorhodopsin and the use of such materials as an optical information carrier. The material comprises one or more hydrophilic polymers that are capable to form a

5 homogeneous phase with proteorhodopsin prior to solidification to a solid form. The hydrophilic polymer, for example, is silica sol-gel, gelatin, polyvinylalcohol, agarose, agar, methyl cellulose, polyvinyl acetate, polyvinyl pyrrolidone, polyethylene glycol, or a mixture thereof. The solid material having immobilized proteorhodopsin is deposited on a substrate selected from the group consisting of glass, paper, metal, fabric material, plastic material, and

10 used as an optical data storage material or a fraud-proof carrier. The present invention further provides a security ink comprising proteorhodopsin and one or more hydrophilic polymers.